

REMARKS/ARGUMENTS

The Office Action mailed December 5, 2002 has been carefully reviewed. Claims 1 - 6 have been amended and claims 7 - 9 have been cancelled. Reconsideration of this application, as amended and in view of the following remarks, is respectfully requested.

Claim Objections

The claim objections a) through d) raised by the Examiner in the Office Action have been corrected.

35 USC 112 Rejections

The rejected claims have been amended. Applicants believe the amended claims overcome each of the 35 USC 112 issues raised by the Examiner.

35 USC 102 Rejections

In the Office Action mailed December 5, 2002, the Examiner rejected original claims 1, 3, and 5-7 as anticipated by Morishima et al. The claims have been amended and the steps and elements of the amended claims described below are not shown by Morishima et al. As stated in Verdegaal Bros. v. Union Oil Co of California, 814 F.2nd 628, 631 USPQ 1051, 1053 (Fed. Cir. 1987), "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference." The rejection is now unsupported by the art and should be withdrawn.

means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section, said means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section comprising

a positive electrode connected to said first end of said microfluidic channel section and a negative electrode connected to said second end of said microfluidic channel section and a DC power supply connected to said positive electrode and said negative electrode,

at least one pair of interdigitated electrodes located on a surface of said microfluidic channel, said interdigitated electrodes comprising a first electrode plate having first electrode projecting legs and a second electrode plate having second electrode projecting legs, said first electrode projecting legs and said second electrode projecting legs interlaced, and

means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow by producing an AC voltage across the interdigitated electrodes, said means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow comprising

an AC power supply connected to said first electrode plate having first electrode projecting legs and said second electrode plate having second electrode projecting legs which sets up a non-uniform electric field proximate said first electrode plate having first electrode projecting legs and said second electrode plate having second electrode projecting legs, said non-uniform electric field collecting said particles

forming at least one pair of interdigitated electrodes on a fluidic microchannel having a multiplicity of first electrode projecting legs and a second multiplicity of electrode electrode projecting legs,

positioning at least one pair of interdigitated electrodes so that said first electrode projecting legs and said second electrode projecting legs are interlaced,

sweeping said particles through said fluidic microchannel by applying an AC voltage across the interdigitated electrodes to establish a non-uniform electric field capable of trapping particles using an dielectrophoretic force,

controlling said voltage applied to each pair of interdigitated electrodes, and

applying a DC voltage across ends of the fluidic microchannel to initiate an electrokinetic/electroosmotic flow field.

35 USC 103 Rejection

In the Office Action mailed December 5, 2002, the Examiner rejected claims 1-7 and 9 under 35 USC 103(a) "as being unpatentable over McBride et al. in view of Becker et al." The claims have been amended. The steps and elements of the amended claims are not shown by the McBride et al. or Becker et al. references. There is no suggestion in the references to form a proper combination. The cited references do not provide a teaching of the claimed combination. The following elements and steps of the amended claims are not shown by the primary reference McBride et al.

means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section, said means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section comprising

a positive electrode connected to said first end of said microfluidic channel section and a negative electrode connected to said second end of said microfluidic channel section and a DC power supply connected to said positive electrode and said negative electrode,

at least one pair of interdigitated electrodes located on a surface of said microfluidic channel, said interdigitated electrodes comprising a first electrode plate having first electrode projecting legs and a second electrode plate having second electrode projecting legs, said first electrode projecting legs and said second electrode projecting legs interlaced, and

means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow by producing an AC voltage across the interdigitated electrodes, said means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow comprising

an AC power supply connected to said first electrode plate having first electrode projecting legs and said second electrode plate having second electrode projecting legs which sets up a non-uniform electric field proximate said first electrode plate having

first electrode projecting legs and said second electrode plate having second electrode projecting legs, said non-uniform electric field collecting said particles

forming at least one pair of interdigitated electrodes on a fluidic microchannel having a multiplicity of first electrode projecting legs and a second multiplicity of electrode electrode projecting legs.

positioning at least one pair of interdigitated electrodes so that said first electrode projecting legs and said second electrode projecting legs are interlaced,

sweeping said particles through said fluidic microchannel by
applying an AC voltage across the interdigitated electrodes to establish a non-uniform electric field capable of trapping particles using an dielectrophoretic force,

controlling said voltage applied to each pair of interdigitated electrodes, and

applying a DC voltage across ends of the fluidic microchannel to initiate an electrokinetic/electroosmotic flow field.

The Becker et al. secondary reference also fails to show many of the steps of the amended claims. Since neither the primary reference nor the secondary reference show the missing steps, a combination of the primary and secondary reference does not show the missing steps or the claimed invention. Applicants respectfully submit that the cited references do not show the claimed combination, there is no suggestion in the references to form a proper combination, nor do the cited references provide a teaching of the claimed combination.

In the Office Action mailed December 5, 2002, the Examiner rejected claims 2, 4, 8, and 9 under 35 USC 103(a) "as being unpatentable over Morishima et al. in view of Bakwell et al." The claims have been amended. The steps and elements of the amended claims are not shown by the Morishima et al. or Bakwell et al. references. There is no suggestion in the references to form a proper combination. The cited references do not provide a teaching of the

claimed combination. The following elements and steps of the amended claims are not shown by the primary reference Morishima et al.

means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section, said means for producing electrokinetic flow in said microfluidic channel section by producing a DC voltage across said first end and said second end of said microfluidic channel section comprising

a positive electrode connected to said first end of said microfluidic channel section and a negative electrode connected to said second end of said microfluidic channel section and a DC power supply connected to said positive electrode and said negative electrode,

at least one pair of interdigitated electrodes located on a surface of said microfluidic channel, said interdigitated electrodes comprising a first electrode plate having first electrode projecting legs and a second electrode plate having second electrode projecting legs, said first electrode projecting legs and said second electrode projecting legs interlaced, and

means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow by producing an AC voltage across the interdigitated electrodes, said means for producing said combination of dielectrophoresis and electrokinetic/electroosmotic flow comprising

an AC power supply connected to said first electrode plate having first electrode projecting legs and said second electrode plate having second electrode projecting legs which sets up a non-uniform electric field proximate said first electrode plate having first electrode projecting legs and said second electrode plate having second electrode projecting legs, said non-uniform electric field collecting said particles

forming at least one pair of interdigitated electrodes on a fluidic microchannel having a multiplicity of first electrode projecting legs and a second multiplicity of electrode electrode projecting legs,

positioning at least one pair of interdigitated electrodes so that said first electrode projecting legs and said second electrode projecting legs are interlaced,

sweeping said particles through said fluidic microchannel by

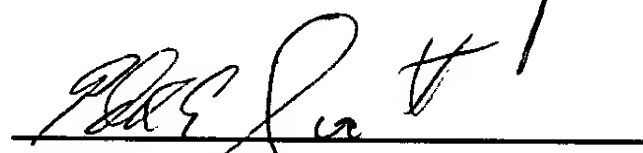
applying an AC voltage across the interdigitated electrodes to establish a non-uniform electric field capable of trapping particles using an dielectrophoretic force, controlling said voltage applied to each pair of interdigitated electrodes, and applying a DC voltage across ends of the fluidic microchannel to initiate an electrokinetic/electroosmotic flow field.

The Bakwell et al. secondary reference also fails to show many of the steps of the amended claims. Since neither the primary reference nor the secondary reference show the missing steps, a combination of the primary and secondary reference does not show the missing steps or the claimed invention. Applicants respectfully submit that the cited references do not show the claimed combination, there is no suggestion in the references to form a proper combination, nor do the cited references provide a teaching of the claimed combination.

SUMMARY

The undersigned respectfully submits that, in view of the foregoing amendments, the enclosed Declarations, and the foregoing remarks, the rejections of the claims raised in the Office Action dated December 5, 2002 have been fully addressed and overcome, and the present application is believed to be in condition for allowance. It is respectfully requested that this application be reconsidered, that the claims be allowed, and that this case be passed to issue. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to call the undersigned attorney at (925) 424-6897.

Respectfully submitted,



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